CLAIMS

We claim:

1. A method for coordinating multiple instances of the same software program residing on a single machine, comprising the steps of:

5 electing one of said software instances as a supervisor program, thereby designating the remainder of said software instances as subordinate programs;

establishing communication connections between said supervisor program and each of said subordinate programs; and

coordinating all of said software instances by having said supervisor program

10 monitor and control all operations of said subordinate programs which require coordination via said communication connections.

2. The method as set forth in claim 1, wherein said machine includes a TCP/IP stack and wherein said electing step comprises at least the steps of:

having each software instance establish a TCP socket;

15 having each software instance attempt to create a binding between its TCP socket and a supervisor port number of said TCP/IP stack; and

designating the software instance which succeeds in creating said binding as said supervisor program.

3. The method as set forth in claim 2 wherein said coordination includes detection of failure of any of said software instances, and wherein:

said step of establishing communication connections comprises at least the step of having each of said subordinate programs establish a TCP connection to the supervisor program; and

said detection of failure comprises the step of having said TCP/IP stack monitor all of said TCP connections, wherein if one of said subordinate programs fails, the supervisor is notified of the failure via the TCP connection established between said one of said subordinate programs and said supervisor program.

4. The method as set forth in claim 2 wherein said coordination includes detection of failure of any of said software instances, and wherein:

said step of establishing communication connections comprises at least the step of having each of said subordinate programs establish a TCP connection to the supervisor program; and

said detection of failure comprises the step of having said TCP/IP stack monitor all of said TCP connections, wherein if said supervisor programs fails, each of said subordinate programs is notified of the failure via the TCP connection established between said one of said subordinate programs and said supervisor program.

5. The method as set forth in claim 4, wherein if each of said subordinate programs is notified of the failure of said supervisor program, said subordinate programs so notified immediately repeat said electing step to elect a new supervisor program and designate a new set of subordinate programs.

6. The method as set forth in claim 1, further comprising the step of creating a registry, within the supervisor process, containing a unique entry for each software instance residing on said machine.

7. A computer readable program product for coordinating multiple instances of the same software program residing on a single machine, said computer program product comprising: a computer readable storage medium having computer readable code embodied in said medium, said computer readable code comprising:

computer instructions for electing one of said software instances as a supervisor program, thereby designating the remainder of said software instances as subordinate programs;

computer instructions for establishing communication connections between said supervisor program and each of said subordinate programs; and

computer instructions for coordinating all of said software instances by having said supervisor program monitor and control all operations of said subordinate programs which require coordination via said communication connections.

8. The computer readable program product as set forth in claim 7, wherein said machine includes a TCP/IP stack and wherein said computer instructions for electing one of said software instances as a supervisor program comprises at least:

computer instructions causing each software instance to establish a TCP socket;

computer instructions causing each software instance to attempt to create a binding between its TCP socket and a supervisor port number of said TCP/IP stack; and

computer instructions for designating the software instance which succeeds in creating said binding as said supervisor program.

9. The computer readable program product as set forth in claim 8 wherein said coordination includes detection of failure of any of said software instances, and wherein:

said computer instructions for establishing communication connections comprises at least computer instructions causing each of said subordinate programs to establish a TCP connection to the supervisor program; and

said computer program product includes detection instructions causing said TCP/IP stack to monitor all of said TCP connections, wherein if one of said subordinate programs fails, the supervisor is notified of the failure via the TCP connection established between said one of said subordinate programs and said supervisor program.

10. The computer readable program product as set forth in claim 8 wherein said coordination includes detection of failure of any of said software instances, and wherein:

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said computer instructions for establishing communication connections comprises

at least computer instructions causing each of said subordinate programs to establish a TCP

connection to the supervisor program; and

said computer program product includes detection instructions causing said TCP/IP

5   stack to monitor all of said TCP connections, wherein if said supervisor programs fails,

each of said subordinate programs is notified of the failure via the TCP connection

established between said one of said subordinate programs and said supervisor program.

11. The computer readable program product as set forth in claim 10, wherein said

computer program product includes instructions which, if each of said subordinate

10   programs is notified of the failure of said supervisor program, causes said subordinate

programs so notified to immediately repeat said electing step to elect a new supervisor

program and designate a new set of subordinate programs.

12.   The computer readable program product as set forth in claim 7, further

comprising instructions causing the creation of a registry, within the supervisor process,

15   containing a unique entry for each software instance residing on said machine.

13. A system for coordinating multiple instances of the same software program

residing on a single machine, comprising:

means for electing one of said software instances as a supervisor program, thereby

designating the remainder of said software instances as subordinate programs;

means for establishing communication connections between said supervisor program

and each of said subordinate programs; and

5   means for coordinating all of said software instances by having said supervisor

program monitor and control all operations of said subordinate programs which require

coordination via said communication connections.

14. The system as set forth in claim 13, wherein said machine includes a TCP/IP

stack and wherein said means for electing includes:

10   means for causing each software instance to establish a TCP socket;

means for causing each software instance to attempt to create a binding between its

TCP socket and a supervisor port number of said TCP/IP stack; and

means for causing the designation of the software instance which succeeds in

creating said binding as said supervisor program.

15   15. The system as set forth in claim 14 wherein said coordination includes means

for detection of failure of any of said software instances, and wherein:

said means for establishing communication connections includes means for causing

each of said subordinate programs to establish a TCP connection to the supervisor

program; and

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said detection means includes means for causing said TCP/IP stack to monitor all of said TCP connections, wherein if one of said subordinate programs fails, the supervisor is notified of the failure via the TCP connection established between said one of said subordinate programs and said supervisor program.

5   16. The system as set forth in claim 14 wherein said coordination includes means for detection of failure of any of said software instances, and wherein:

said means for establishing communication connections includes means for causing each of said subordinate programs to establish a TCP connection to the supervisor program; and

10   said detection means includes means for causing said TCP/IP stack to monitor all of said TCP connections, wherein if said supervisor programs fails, each of said subordinate programs is notified of the failure via the TCP connection established between said one of said subordinate programs and said supervisor program.

17. The system as set forth in claim 16, wherein if each of said subordinate

15   programs is notified of the failure of said supervisor program, said subordinate programs so notified immediately repeat said electing step to elect a new supervisor program and designate a new set of subordinate programs.

18. The system as set forth in claim 13, further comprising means for creating a registry, within the supervisor process, containing a unique entry for each software instance residing on said machine.